



# UNDERWATER CAMERA WITH MONITOR

**Model 91309**

## ASSEMBLY AND OPERATING INSTRUCTIONS



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For technical questions and replacement parts, please call 1-800-444-3353

## Specifications

Battery	Sealed, Lead Acid (with fuse)
Maximum Camera Depth	65 Feet (Length of Cable)
Overall Weight	11.85 Lbs.
Camera Dimensions	1-5/8" W x 7" L x 3-7/8" H
Camera Light Source	Built-in Infrared LED Bulbs
Input Voltage	12 Volts DC
Camera Operating Temperature	-20° to 120° F
Camera Angle-of-View	83° (horizontal), 60° (vertical)
Camera Depth-of-View	15" (approximate; in clear water)
Monitor Image	Black and White
Monitor Picture Resolution	450 (TV Lines)
Monitor Input Voltage	11 to 15 Volts DC
Monitor Operating Temperature	-20° to 120° F
Monitor Dimensions	6-1/16" W x 7-5/8" L x 6" H
*Note: Battery and Monitor <u>not</u> water-resistant and <u>not</u> for underwater use.	

## Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

## General Safety Warnings and Precautions

**WARNING: When using product, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.**

**Read all instructions before using this product!**

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use the Battery (4) or Monitor (2) in damp or wet locations. Don't expose them to rain. Keep work area well lit.
3. **Keep children away.** Do not let them handle the Camera/Monitor system.
4. **Store idle equipment.** When not in use, the Camera/Monitor system must be stored in a dry location to inhibit rust. Always lock up the Camera/Monitor system and keep it out of reach of children.
5. **Use the right product for the job.** There are certain applications for which this product was designed. Do not modify this product and do not use this product for a purpose for which it was not intended.
6. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in cables. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
7. **Use eye protection.** Always wear ANSI approved impact safety goggles during setup, maintenance, and whenever handling the Battery (4). If working near water, wear a life vest and use other appropriate safety gear, if necessary.
8. **Do not overreach.** Keep proper footing and balance at all times.

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9. **Maintain products with care.** Keep products clean for better and safer performance. Follow instructions for changing accessories. Inspect cords periodically, and if damaged, have them repaired by an authorized technician.
10. **Disconnect power.** Unplug the system when not in use.
11. **Stay alert.** Watch what you are doing, use common sense. Do not operate any product when you are tired.
12. **Check for damaged parts.** Before using any product, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for any broken parts or mounting fixtures, a leaking battery, loose connections, damaged seals on the Camera, and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the product if any switch does not turn On and Off properly.
13. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this product. Approved accessories are available from Harbor Freight Tools.
14. **Do not operate product if under the influence of alcohol or drugs.** Read warning labels if taking prescription medicine to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the product.
15. **Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.
16. **Pacemaker Warning.** People with pacemakers should consult their physician(s) before using this product. Electromagnetic fields in close proximity to a heart pacemaker could cause interference to or failure of the pacemaker.

**Note:** Performance of this product may vary depending on battery power.

**Warning:** The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

## Unpacking

When unpacking, check to make sure the parts listed on page 7 are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

## Monitor and Underwater Camera Specific Safety Warnings

1. Keep the Monitor (2) out of the direct sunlight. Do not let it overheat, freeze, or be exposed to wet conditions.
2. Do not locate the Monitor (2) near radiators, ovens, or any other heat source.
3. Always handle the Monitor (2) and the Camera (1) with care. Do not allow either to experience shaking or strong vibration. **Never use the Camera in surf, near a pier, rocks, or any other obstacle.**
4. To allow air circulation, locate the Monitor (2) at least two inches from walls, cabinets, or other enclosures.
5. **When connecting the Camera (1) to the Monitor (2), the power must be off or both units will be damaged.**
6. **Do not tip or drop the Battery (4). Tipping or dropping will cause acid to leak. If acid leaks on you, immediately wash off the acid with cold water. Seek medical attention immediately.**
7. Always keep the RED (+) terminal on the Battery (4) disconnected unless the system is being used. When connected, it will constantly drain the Battery (4).

## Operation

### Connecting the system

**Note: This is a 12 Volt DC system and will not work on 24 Volt DC systems; hooking the monitor up to a 24V system can damage or ruin this product.**

Rear Inputs shown in **FIGURE 1**:

**DC 12 Volt In** - Plug in 12 VDC power system here.

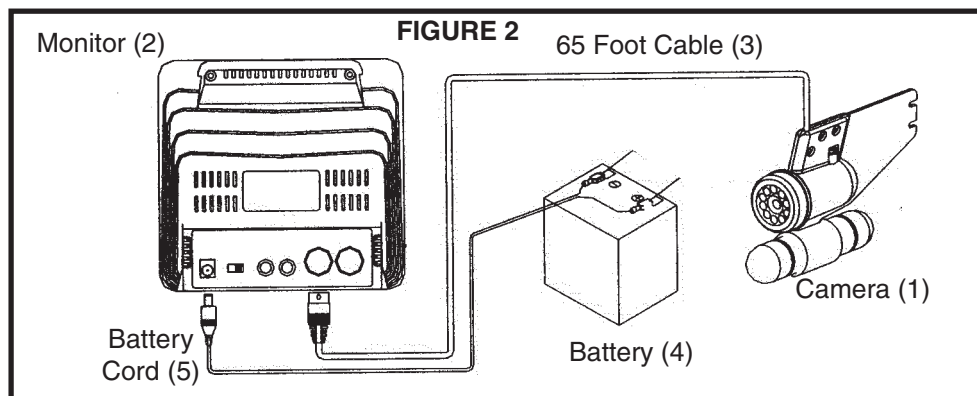
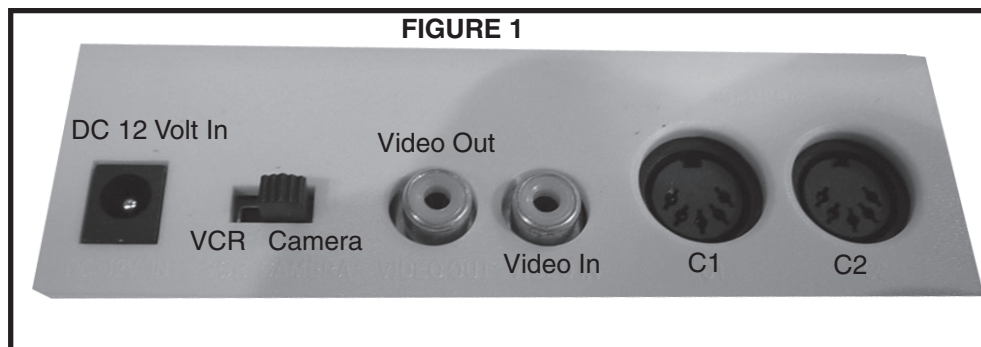
**VCR Camera** - When the switch is set on "VCR", you can record footage to a VCR. When the switch is on "Camera", It will show the footage being captured by the Camera.

**Video Out** - to be used to record to a VCR.

**Video In** - Can be used as a video-only monitor (no sound).

**C1** - Camera connection.

**C2** - Second camera connection.



## Operation (continued)

### Connecting the system (continued)

1. Set the Monitor (2) in a dry, stable position, out of the direct sunlight and in accordance with the operational warnings above. Set the Sunshade (8) on top of the Monitor (2). Just a few feet from the Camera (1), run the 65 Foot Cable (3) around a railing or post to keep the weight of the Camera (1) from dislodging the Monitor (2) from its stable position. Plug the 65 Foot Cable (3) into the Camera port (**C1**) on the back of the Monitor (2). Refer to **FIGURE 2** on page 4,
2. Set the Battery (4) in a dry position, on a plate or other flat, stable surface out of the sun, close enough for the Battery Cord (5) to reach the rear of the Monitor (2). Attach the Black (-) alligator clip on the Battery Cord (5) to the Black (-) terminal on the Battery (4). Attach the Red (+) alligator clip on the Battery Cord (5) to the Red (+) terminal on the Battery (4). Plug the other end of the Battery Cord (5) into the **DC 12 Volt In** input on the back of the Monitor (2).
3. Set the **VCR/Camera** switch (on the back of the Monitor (2)) to Camera.
4. Turn on the **POWER** button on the front of the Monitor (2). See **FIGURE 3** below.

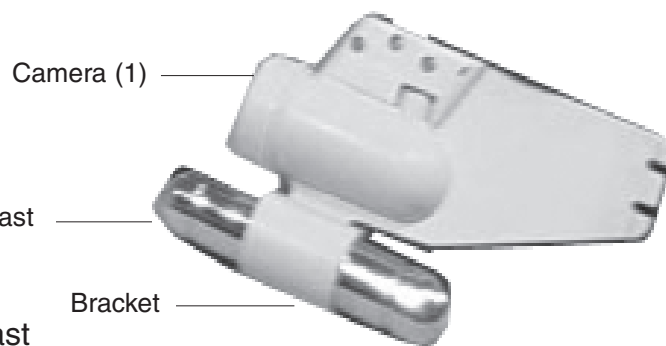
**FIGURE 3**



5. Push the Camera button (above) in, if using the **C1** Camera input, and leave it out if using the **C2** input. You should see an image on the Monitor (2). If not, recheck your connections.

**Note:** The Ballast (see **FIGURE 4**) can be set so that the Camera (1) can be set to have no angle, or angled slightly down or up. Slightly open the bracket on the Camera (1) to tilt the Ballast.

**FIGURE 4**



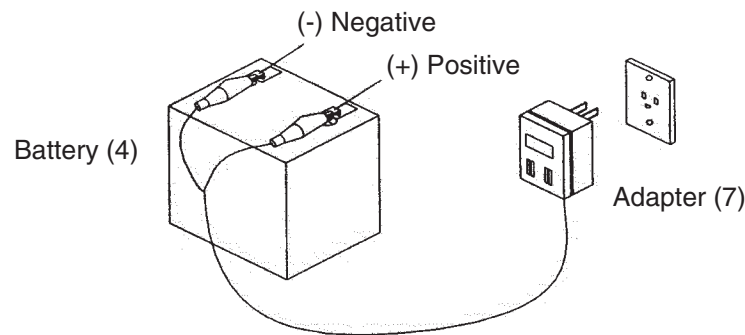
6. Gently lower the Camera into the water and reel out the 65 Foot Cable (3) until it is at the appropriate depth.
7. Adjust the Brightness (**BRI.**) and Contrast (**CONT.**) on the front of the Monitor (2). See **FIGURE 3**. If additional light is needed, push on the (**LED**) switch on the front of the Monitor (2). You can dim the LED lights with the **DIMMER** switch.
8. When you are finished, remove the Camera (1) from the water, turn off the **POWER** switch on the Monitor (2), disconnect the alligator clips on the Battery Cord (5) from the Battery (4), and unplug the Battery Cord (5) from the Monitor (2).

**Warning!! Always keep the Camera (1) and Battery (4) dry and protected from the elements. Never try to disassemble the Camera's (1) waterproof housing.**

## Maintenance

1. Always turn off the power and disconnect the unit when not in use.
2. Wipe all of the components to remove any moisture after each use.
3. Make sure the terminal contacts on the Battery (4) are clean and free of corrosion.
4. After six hours of use, charge the Battery (4) following the directions below.
5. Keep the Camera (1) lens clear of dirt or debris.

FIGURE 5



**Never reverse the polarity when connecting the Battery (4) for charging it or running the system.** The Red (+) terminal must be attached to the Red (+) clip on the Battery Cord (5), and the Black (-) terminal must be attached to the Black (-) clip. See **FIGURE 5**.

### Battery Charging

Connect the two clips of the Charger (7) to the corresponding positive and negative terminals on the Battery (4). Plug the Charger (7) plug into the power outlet. The indicator on the Charger (7) will stay red until the charge is complete. Once the charge is complete, the indicator will turn green. **Promptly** unplug the unit from the power outlet and remove the clips from the terminals. **Do not overcharge the battery; overcharging can result in damage to or acid leaking from the battery.**

### Troubleshooting

If the system is not operating properly, by displaying a rolling, shrunk, or unstable picture, check all of the connections. Next, make sure the Battery (4) is fully charged. Also, check to make sure the fuse on the Battery (4) is good. If the system still does not work properly, take the system to an authorized service technician.



## Assembly Drawing and Parts List

Part No.	Description
1	Camera
2	Monitor
3	65 Foot Cable (attached to Camera (1))
4	Battery
5	Battery Cord
6	Case
7	Adapter
8	Sunshade

**Note:** Adapter (7) and Sunshade (8) not shown.



### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

**NOTE:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.